



INTERNATIONAL TEST TECHNOLOGIES

www.intertesttech.com

Bone Piles?



Convert to assets...



...using μ Master



Hardware Debug Solutions

fast, automated diagnosis
even for 'dead' boards

Faulty boards?

- μMaster can debug them!

µMaster provides the complete solution for the hardware debug of virtually any processor-based board. µMaster supports a wide range of UUT CPU's, including Intel®, AMD®, and Motorola® processor families. We are constantly expanding this range so for the latest developments please see our website (www.intertesttech.com).

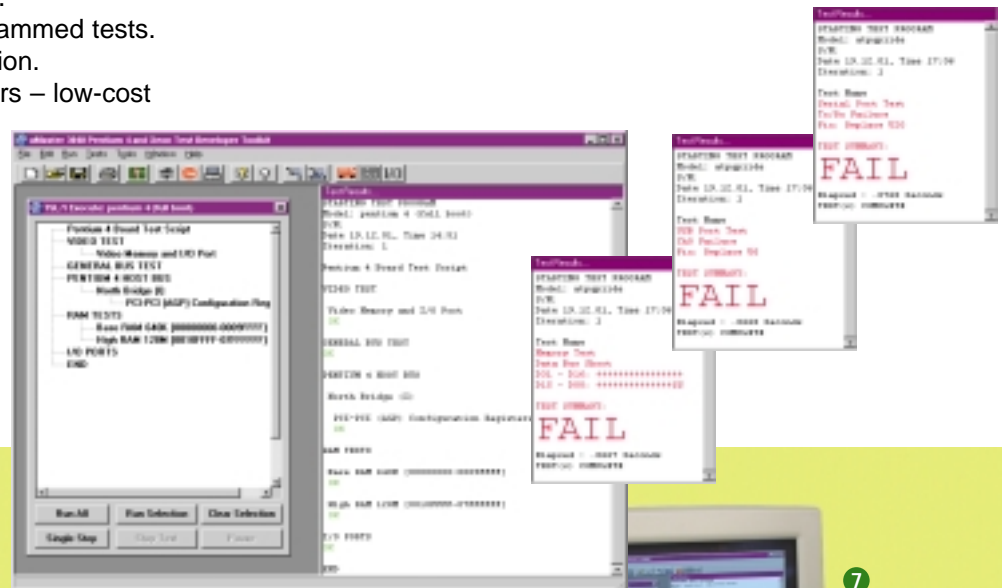
What benefits does μMaster provide?

- Automatic fault diagnosis – even for dead boards.
- Turn your bone-pile boards into financial assets.
- Detailed component-level diagnostics facilitate less skilled debug and repair.
- Rapid fault location - full diagnosis in seconds.
- Fast and easy to connect to UUT.
- Supplied with library of pre-programmed tests.
- Automatic Test Program Generation.
- Supports wide range of processors – low-cost upgrades for new varieties.
- Open architecture – supports 3rd party instrumentation, test executives and programming languages.
- Flash device programming is also supported.

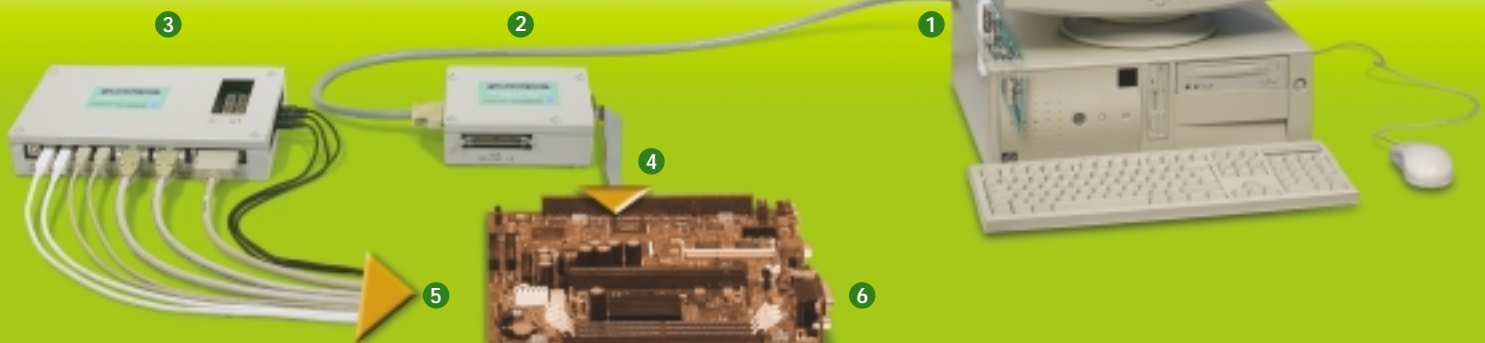
Who uses μMaster?

The world's leading manufacturers of embedded systems, SBC's and PC's use μ Master test solutions to eliminate bone piles, and to assist in the repair of manufacturing fall-out and field returns. μ Master is also used in development debug, where it can significantly reduce lead times. Application areas include:

- Telecoms and Networking.
- Computing - servers, workstations, notebooks, PDA's, SBC's, etc.
- Heavy Industries - Automotive, Avionics, etc.
- Entertainment - set-top boxes, internet applications, game consoles.
- Commercial goods - data storage, office automation, graphics and imaging.



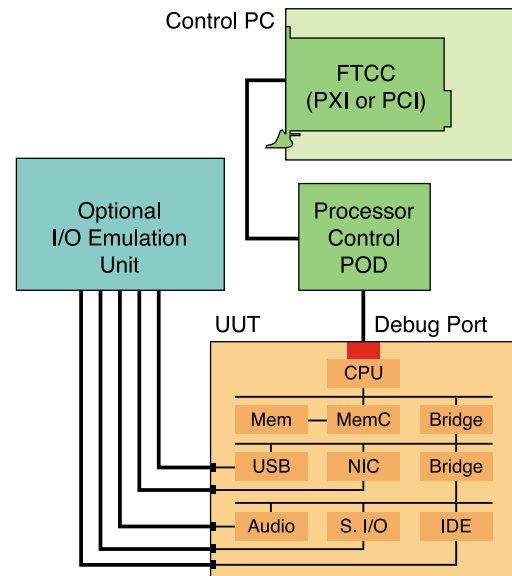
1. Functional Test Controller Card (PCI or PXI)
2. Processor Control POD
3. Optional I/O Emulation Unit
4. Cable to UUT debug port
5. Cables to UUT I/O ports
6. UUT - any board with a processor
7. Control PC



Whatever your needs – we can satisfy them!

Very easy operation

The μ Master user interface is designed for minimum effort. Built-in test scripts diagnose faults in seconds. These scripts can check all addressable board components, including I/O ports. Comprehensive diagnostic reports can even indicate components to replace. For new boards, the Automatic Test Program Generation (ATPG) tool captures boot and initialization sequences, automatically converting these into test scripts.



What's the underlying technology?

We go straight to the heart of the UUT, directly accessing the processor via its industry-standard debug port. Having taken full control of the processor, we use it as a means to sequentially test and diagnose all addressable buses and components, even when the UUT is "dead" or unable to boot.

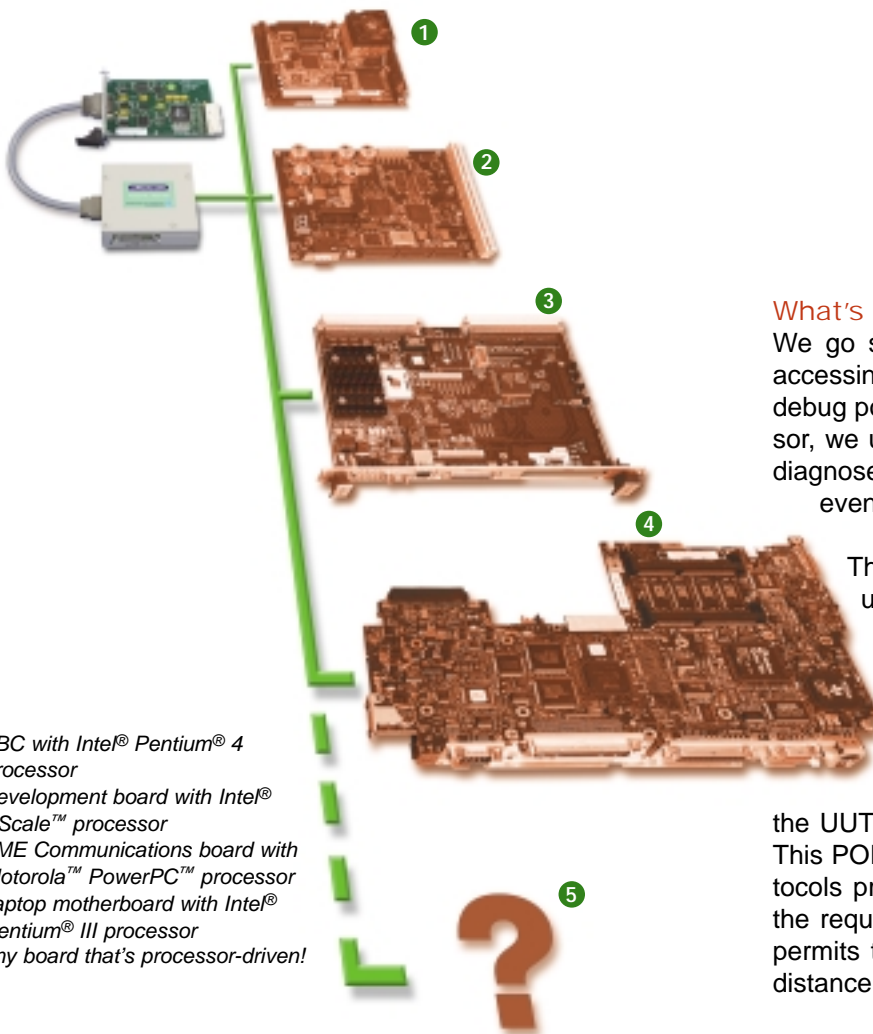
The diagram above shows the basic configuration required to fully test and diagnose a processor board, including all I/O ports. At the top left is the μ Master Functional Test Controller Card (FTCC). This is available in both PCI and PXI form factors.

The FTCC connects to the Debug Port of the UUT processor via a Processor Control POD. This POD translates generic signal levels and protocols produced by the FTCC so that they match the requirements of the specific processor. It also permits the FTCC host computer to be sited at a distance from the UUT.

The optional I/O Emulation Unit monitors and supplies feedback to I/O ports, avoiding the need to attach real devices for full functional testing. Real peripherals can be used if preferred. For analog and non-standard I/O, third party instrumentation such as DMM's and DSO's can be easily combined with a μ Master solution.

Wide range of CPU support

As can be seen from the diagram above, μ Master solutions are available to debug UUT's driven by a wide range of processors. We are constantly expanding this range so please check our website for the latest developments (www.intertesttech.com).



Technical Specs

Hardware

Host PC Requirements

- Platform:
 - either a 100% compatible IBM® PC, with a spare PCI slot
 - or a PXI chassis controlled by a 100% compatible IBM® PC, plus one spare PXI slot.
- Operating System:
 - Microsoft® Windows® 95, 98, NT, 2000, or XP

Functional Test Controller Card

- 33MHz +5v PCI or PXI.

Processor Control POD's

POD's are available for the following UUT processors:

- Intel®
 - Pentium®, Pentium® II, Pentium® III, Pentium® IIIM, Pentium® 4, Celeron™, Xeon™, XScale™ processors
- AMD®
 - Athlon®, Duron® processors
- IBM® / Motorola®
 - PowerPC™ processors
- POD's for additional processors are in development. Please see our website (www.intertesttech.com) for the latest range.

UUT Test Access

- Via processor's debug port using:
 - manufacturer's on-board connector
 - bed-of-nails
 - interposer¹
- All tests run at FULL processor speed.
- Typically, only 5-10 test points are needed.

Flash Programming

Many common flash devices can be programmed via the FTCC and Processor Control POD.

Optional I/O Emulation

An optional I/O Emulation Unit is available for the following ports, avoiding the need for real peripherals:

- | | |
|--------------|----------------|
| • Serial I/O | • Parallel I/O |
| • USB | • SCSI |
| • IrDA | • IDE |
| • Keyboard | • Mouse |
| • Audio | |

Software

User Interface

- Very easy to operate – built-in tests diagnose faults in seconds.
- Comprehensive diagnostic reports can even indicate components to replace.
- Built-in Automatic Test Program Generation.

Pre-Programmed Tests²

Start/stop processor, Read memory, Write memory, Read I/O, Write I/O, RAM Test (SRAM, DRAM, SDRAM, DDR SDRAM, RAMBus...), ROM CRC/Checksum, Fill Memory, Check Memory, Breakpoints, Run UUT.

Software (cont.)

Automatic Test Program Generation (ATPG)

Using a known-good board and our selection of ATPG tools, partial or complete diagnostic programs can be quickly created for many UUT's.

Test Programming Service

We develop new test programs and modify existing ones to meet customers' specific needs when they have insufficient in-house resources.

Optional I/O Emulation

We can supply test programs for many common chipsets and I/O devices to use in conjunction with our optional I/O emulators.

Open Architecture

Our testers have an open architecture allowing them to be easily integrated with new or existing test solutions.

Supported Programming Languages

- C, C++
- Microsoft® Visual Basic®
- Microsoft® Visual C++®
- National Instruments™ CVI™

Supported Test Executives

- National Instruments™ TestStand™
- Any Microsoft® Windows®-based Test Executive.

3rd Party Instruments

- Switches, DMM's, DSO's, etc.

ROM Emulation

Support for older UUT processor varieties is also available using ROM emulation instead of debug port access. Please contact International Test Technology sales, or your distributor for more details. The following processors are supported:

- Intel®
 - 80486, 80386, i960 C/H/J series, 80286, 8086/186, 8088/188, 8051/31 processors.
- Motorola®
 - 680x0, 683xx, 68HC11 processors.
- Zilog®
 - Z80 processors.

1. An interposer is a breakout circuit, which sits between the processor and its socket. Interposers are only available for selected processors.
2. The range of available tests varies between processor families. This list only shows a typical sample.

All trademarks are acknowledged as the property of their respective owners.

Distributed by: